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Teacher's approach adds up to practicality

By: Manasee Wagh

Lindsay Konell uses "real world" applications to make math more engaging to her students at William Tennent High School.

They've mastered the basics of volume and surface area.

Next up: Oreos.

Lindsay Konell's students at William Tennent High School in Warminster are putting their geometry skills to work, designing packaging for a giant version of the crunchy black-and-white cookies.

Nabisco hasn't recruited the 20 students, but Konell would like them to pretend they're interns working for the company. For the past two weeks, she's been their manager, providing packaging specifications and guidance.

Her unusual approach to math has a practical purpose.

"Kids are always asking, 'What am I going to use this for?' " Konell said. "A project gives them a real world application and makes math more exciting."

In a recent class with grades nine and 10, her students got into groups for the next step.

"We have a new development. Nabisco wants to make sure the package is durable, that it preserves the freshness of the product, and that consumers like it, whether it's pretty or environmentally friendly," Konell told them.

Students got busy with laptops, researching the benefits of different materials such as cardboard, plastic and tin. Konell's specifications provided a list of materials and their prices. Students have to present their packaging choices to the class and describe their reasons for choosing specific materials.

"We're assigned shapes for the packages," said Alexa Weber, 14, whose group was doodling designs and calculations on paper. "Our group's doing a prism. The Oreos have a certain dimension, so we have to figure out how to fit them in a prism shape."

As an added bit, students have to design a party-size package using whatever shape they wish.

"Do we have to have a slogan?" asked Matt Gehan, 14.

Konell advised him to come up with something that would catch a customer's eye.

She thought of the Oreo assignment after attending a Knowles Science Teaching Foundation teacher workshop last summer.

The Moorestown, N.J.-based foundation was started in 1999 to support math and science teachers through professional development and networking opportunities.

As part of her five-year fellowship with Knowles, Konell attends conferences where she learns about the latest research in math instruction, exchanges ideas with other teachers and discusses issues like the best way to assess student knowledge.

She's even going to Uganda for two weeks this summer to lead teacher workshops and help develop an education recycling program to make use of materials that would be useful in math lessons.

Knowles gives Konell grant money for classroom tools, including a projector, Legos, models of 3D solids, and books.

A common teacher complaint these days is that more classroom time than ever has to be devoted to preparing students for standardized tests. But Konell said studies have shown that doing creative projects improves test scores.

"Doing projects makes them think outside the box, so if they see a question they don't know, they can still figure out how to solve it," she said.

She's had her students connect lessons to painting, architecture and sculptures, and she's held environmental-themed math lessons centered on how much people waste.

Konell, who switched to her dream of becoming an educator after a career as an actuary, teaches five geometry classes that run the full gamut of academic levels. She hopes to expand her project-based teaching methods into several classes.

"I really like the projects," said 16-year-old Delaney Walker, with a smile. "She's using something from real life that we like. We care about Oreos."